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Development and investigation of a cooling system for a parked vehicle using solar energy (Article)

Mohiuddin, A .K.M.[a], Osman, A .[a], Uddin, M.F.[b]

[a]Department of Mechanical Engineering, Faculty of Engineering, International Islamic University Malaysia, Malaysia
[b]Department of Computer Science and Engineering, Independent University, Bangladesh

Abstract

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The temperature of the interior of a car gets increased substantially during day time when parked under un-shaded parking area for long duration. It is very uncomfortable for the passengers and driver during the start of the driving as the air conditioner will take time to fully cool the interior of the vehicle . This paper mainly focuses on ways to reduce the interior temperature of the parked vehicle . A system has been designed that employs the solar panel, battery, inlet and exhaust fans, temperature sensor and an electric control circuit. The experiment was performed on a car cabin prototype model made using CPU casing of a desktop computer. The inlet air fan is located lower than the exhaust air fan at the car model as the hot air moves up and to have a better air flow distribution. It was observed that the interior temperature of the car model decreased significantly when the system was installed. The simulation was done by using ANSYS FLUENT R15 to investigate the airflow distribution inside the car cabin when inlet and outlet fans were in action. The results showed that the car interior has a better airflow distribution when the inlet fan is positioned lower than the outlet fan. © BEIESP.

SciVal Topic Prominence

Topic: Air conditioning | Thermal comfort | Cabin temperature

Prominence percentile: 85.671

Author keywords

Cooling system | Flow distribution | Interior temperature | Parked vehicle | Prototype | Solar energy

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Mohiuddin, A .K.M.; Department of Mechanical Engineering, Faculty of Engineering, International Islamic University Malaysia, Malaysia; email:mohiuddin@iium.edu.my

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